

## Claims

1. A thermoplastic elastomer composition characterized in that the composition comprises (A) a conjugated diene-based polymer obtained by polymerizing a conjugated diene-based compound using a rare earth element compound-based catalyst and (B) a thermoplastic resin.

2. The thermoplastic elastomer composition according to claim 1, wherein the conjugated diene-based polymer (A) is one obtained by polymerizing the conjugated diene-based compound using a catalyst containing the following components (a) to (d) as main components.

Component (a): a compound containing a rare earth element having an atomic number of 57-31 in the Periodic Table or a compound obtained by reaction of the compound with a Lewis base;

15 Component (b): an alumoxane;

Component (c): an organoaluminum compound corresponding to  $AlR^1R^2R^3$  (wherein  $R^1$  and  $R^2$ , which may be the same or different, represent a hydrocarbon group having 1 to 10 carbon atoms or a hydrogen atom, and  $R^3$  represents a hydrocarbon group having 1 to 10 carbon atoms, provided that  $R^3$  may be the same as or different from the above  $R^1$  or  $R^2$ ); and

Component (d): a silicon halide compound and/or a halogenated organosilicon compound.

3. The thermoplastic elastomer composition according to claim 1, wherein the component (a) is neodymium.

4. The thermoplastic elastomer composition according to any one of claims 1 to 3, wherein the conjugated diene-based

compound is 1,3-butadiene.

5. The thermoplastic elastomer composition according to any one of claims 1 to 4, wherein the conjugated diene-based polymer preferably has a 1,4-cis bond content of 90% or more, and a ratio (Mw/Mn) of a weight-average molecular weight (Mw) to a number-average molecular weight (Mn) of 3.5 or less as measured by gel permeation chromatography.

6. The thermoplastic elastomer composition according to claim 1, wherein the thermoplastic resin (B) is at least one selected from the group consisting of a crystalline polyolefin-based resin, an amorphous polyolefin-based resin and a hydrogenated diene-based polymer.

7. The thermoplastic elastomer composition according to any one of claims 1 to 6, wherein the composition is obtained by dynamic heat treatment of the conjugated diene-based polymer (A) and the thermoplastic resin (B) under the presence of a crosslinking agent.

8. The thermoplastic elastomer composition according to any one of claims 1 to 7, wherein the conjugated diene-based polymer (A) is from 50 to 95 parts by weight and the thermoplastic resin (B) is from 50 to 5 parts by weight [provided that (A)+(B)=100 parts by weight].

9. The thermoplastic elastomer composition according to any one of claims 1 to 8, wherein the composition may contain a softener and/or a plasticizer in an amount of 200 parts by weight or less, when the total of the conjugated diene-based polymer (A) and the thermoplastic resin (B) is taken as 100

parts by weight.

10. A formed article formed of the thermoplastic elastomer composition according to any one of claims 1 to 8.